

LIGHTWEIGHT, LOW-COST SOLAR ENERGY COLLECTOR

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ABSTRACT OF THE DISCLOSURE

10 A lightweight solar concentrator of the reflecting parabolic or trough type is realized via a thin reflecting film, an inflatable structural housing and tensioned fibers. The reflector element itself is a thin, flexible, specularly-reflecting sheet or film. The film is maintained in the parabolic trough shape by means of a plurality of identical tensioned fibers arranged to be parallel to the longitudinal axis of the

15 parabola. Fiber ends are terminated in two identical spaced anchorplates, each containing a plurality of holes which lie on the desired parabolic contour. In a preferred embodiment, these fibers are arrayed in pairs with one fiber contacting the front side of the reflecting film and the other contacting the back side of the reflecting film. The reflective surface is thereby slidably captured between arrays

20 of fibers which control the shape and position of the reflective film. Gas pressure in the inflatable housing generates fiber tension to achieve a truer parabolic shape.